Economics of Migration

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- The second approach, based on education-experience *cells*, was proposed by Borjas (2003): a key contribution offering interesting insights on the difficulties of identifying the effect of immigration on wages (see also Frattini, 2015, pp. 473-81).
- In particular this contribution is important for the aspect of how to claim that immigrant and native workers are similar, i.e. the compete in the same labor market.
- As a preliminary remark, Borjas (2003) notes that, in the US, immigration clusters in few metropolitan areas (Los Angeles, New York and Miami).
- For this reason, most studies focus on these areas looking first of all to the existence of spatial correlation, i.e. a correlation between the share of immigrants in a location, and the local wage levels.

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- If, across localities, spatial correlation is negative, i.e. the localities with higher shares of immigrants have lower wages, this is taken as evidence supporting (not proving!) the existence of a negative nexus between immigration and local wages.

- Previous studies mentioned by Borjas (2003) found that this evidence is weak, i.e. it is not clear that in localities with more immigrants wages are lower.

- However, there are at least two problems with weak spatial correlation that we mentioned above: i) immigrants are not distributed at random across localities, but choose localities; ii) local economies might adjust to immigration by the relocation of some natives to other locations.

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- These limitations, according to Borjas (2003) suggest to move the focus to the national context.

- In general, the ideal situation would be to estimate the effect of immigration on opportunities in the labor market of a particular skill (education) group. However, given a classification based only on education, there would too little variation to identify the effect of a supply shock (i.e. an immigration flow) on the wage structure.

- In other words, given a flow of immigrants with, for example, primary school degree (a "small" group), the effect on the supply of workers with primary school degree (a large group) would be too small to detect an effect on wage levels by skill group.

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Identification Issues

- In Borjas (2003) the author proposes to treat workers in a national context (natives and immigrants), as belonging to cells: i.e. workers with different levels of education and experience, belong to different education-experience cells.

- In this conceptual framework, workers belonging to the same cell (natives and immigrants) are perfect substitutes, while workers in a cell are imperfect substitutes for workers in other cells.

- In particular, workers with the same education level can be imperfect substitutes for workers with the same education level but a different level of experience.

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- Borjas (2003) uses four categories of education: i) high-school dropouts; ii) high-school graduates; iii) some college; iv) college graduates.

- Work experience is a variable counting the years between the current age and the year the worker left education (the implied hypothesis is that s/he was seldom unemployed). Workers are grouped into 5-year experience year classes.

- The analysis is restricted to men aged 18-64, for the period 1980-2000. An immigrant is a worker that, in the year of the observation, is born abroad.

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- Borjas (2003) computes the <u>immigration share</u> for education level i, with experience level j at time t. This share is given by:

$$p_{ijt} = \frac{M_{ijt}}{M_{ijt} + N_{ijt}} \tag{1}$$

where M_{ijt} is the number of immigrants (with education level i and experience level j at time t), and N_{ijt} is the number of natives (with education level i and experience level j at time t).

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- The point of this classification is to better identify the effect of the supply shock given by immigrant flows.
- Borjas (2003) shows that, indeed, given an education level, the immigration shock does not affect all the workers in that level, but only those with a certain experience level (in other words, for workers with primary education, immigration shares can be, for example, high for cells with few years of experience and low for those with many years of experience).
- The immigration shares, in addition, vary over time.

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- Borjas (2003, Fig.II) shows that there exists a negative correlation between changes in the immigration share and changes in the natives' wage for his choice of education-experience cells, as in Figure 1:

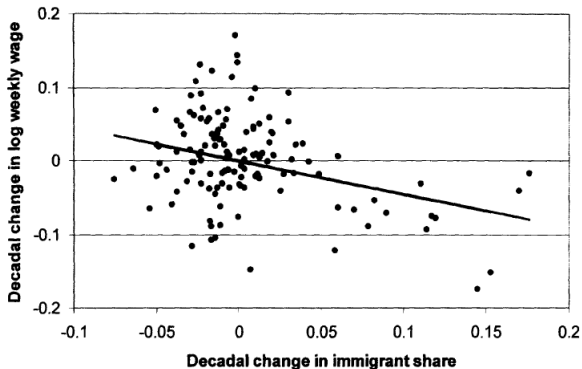# The Economics of Migration: General Issues
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FIGURE II
Scatter Diagram Relating Wages and Immigration, 1960–2000

Figure 1: Changes in natives' wage and immigration shares (Borjas, 2003)

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Identification Issues

- The <u>estimation</u> of the effect of the immigrant share on the wages of the natives is obtained from an equation such as:

$$y_{ijt} = \theta p_{ijt} + FE_{ijt} + \psi_{ijt} \tag{2}$$

where y_{ijt} is an economic outcome, such as the (log) annual or weekly earnings.

- Borjas (2003) finds <u>a negative and significant value of the coefficient θ suggesting that</u>, controlling for the possible effect of other factors (in particular, <u>fixed factors</u>, i.e. factors that characterize all members of a a certain education/skill cell or a certain time period), <u>a higher immigration share in an education-skill cell, reduces the natives's wage in that cell</u>.

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- Conclusion of Borjas (2003, p. 1353): "in short, <u>defining a skill group in terms of both education and experience implies that immigration has a more adverse impact than a specification that ignores the experience component.</u>"

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- Overall, Borjas (2003) finds a negative effect of immigration on natives' wages, as predicted by the standard textbook labor market model.

- In particular, over the period 1980-2000, the reduction of wages imputed to immigration is around -3.2%, with values of -8.9% for the lowest education group (high-school dropouts), -2.6% for the high-school graduates, almost zero for "some college" category, to -4.9% for the highest education group (college graduates).

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Immigration and Economic Growth

- In the case of US, and in any case in which the number of foreign-born workers is sizable, there is no doubt that immigration contributes to national output.
- It is less clear whether immigration contributes to per capita output (Borjas, 2019, p. 3)

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Immigration and Economic Growth

- Overall, the factors to be taken into account for a complete evaluation of <u>the effects of immigration on economic growth</u> are:

i the skills that immigrants bring to the country;

ii the rate at which immigrants become more productive (the "economic assimilation");

iii the impact of immigration on the employment opportunities of native workers;

iv the impact that immigrants have on the total income accruing to the pre-existing population (i.e., the "immigration surplus");

v and the fiscal impact of immigration, as measured by a comparison of the taxes immigrants pay with the cost of the services they receive.

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Immigration and Economic Growth

- If effects i)-v) are difficult to measure, as well as their net effect: "there is a consensus on one important point: <u>immigration has a more beneficial impact when the immigrant influx is composed of high-skill workers</u>." (Borjas, 2019, p. 5)
- The Solow model predicts that a temporary increase in the labor force due to immigration can have a transitory negative effect on per worker output, but no effects on the steady state.

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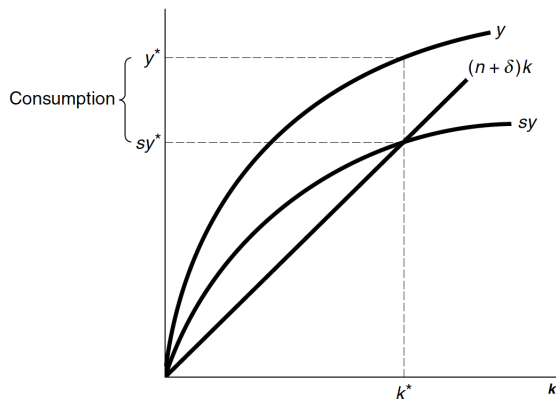## Immigration and Economic Growth

Figure 2: Steady state in the Solow model. Source: Jones (2013)

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Immigration and Economic Growth

- In Figure 2, assuming the economy is in steady state, a temporary increase in immigration can be represented by an increase in L.
- This shifts the economy to a lower level of $k = K/L$ from the steady state level k^*: however, the economy subsequently adjusts through the accumulation of capital (it can be shown that an increase in L increases the return to capital r), and goes back to the steady-state level k^*.
- A permanent increase, represented by an increase in n, would instead imply a reduction in the per-capita steady state level of per-worker capital and output (but no effects on long-run growth, given by the rate of technological progress).
- In Figure 2 this can be represented by a counter-clockwise rotation of the $(n + \delta)$ line, implying a lower level of y^*

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- An important extension of the Solow model was provided by Mankiw et al. (1992), who proposed an augmented version of the Solow model, in which production takes place also by utilizing human capital.

- The production function would then be given by:

$$Y_t = K_t^{\alpha} H_t^{\beta} A L^{(1-\alpha-\beta)} \tag{3}$$

where H_t is the level of human capital utilized in production at time t (in empirical applications, H is measured for example by the share of working population in secondary school)

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Immigration and Economic Growth

- Borjas (2019, p. 9) shows that, in the framework of Mankiw et al. (1992), immigration can have a permanent effect on per-worker output if the pool of immigrants is relatively very skilled.

- Intuition: the flow of immigrants have a decreasing effect on per-worker output because of the effect on n.

- On the other hand, if immigrants are relatively skilled (in particular, on average more than the native workers), this effect can counterbalance the negative effect given by their sheer number.

- Idea: immigrants (as workers in general) can contribute to production through i) their number and ii) their skills.

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- "An important lesson from this brief overview of the Solow model is that persistent immigration will often reduce per-capita income in the steady state, particularly when the immigrants are perfect substitutes or less skilled than the natives...

- ... Immigration may spur long-term growth only if the supply shock is composed of very highly skilled workers...

- ... In fact, such a supply shock could increase per-capita incomes by far more than the model suggests if the immigrants also produce human capital externalities that permanently increase the productivity of native workers." (Borjas, 2019, p. 9)

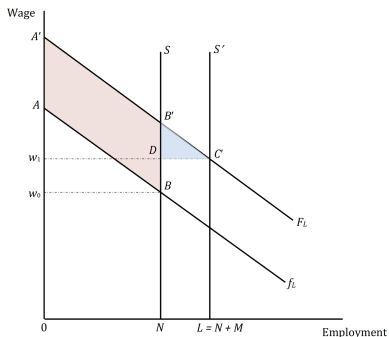# The Economics of Migration: General Issues

Immigration and Economic Growth

- In an econometric estimation of the causal effect of immigration on total and per-capita GDP across US states for the period 1960-2017, Borjas (2019) finds a positive effect on total GDP but no effects on per-capita GDP.
- Differently, Boubtane et al. (2017), for a sample of OECD countries for the period 1986-2006, adopting the framework of Mankiw et al. (1992), find a positive effect of immigration on per capita income and productivity.
- After showing that the immigration surplus estimated for the US is quite small (0.29 percent of GDP in 2017), Borjas (2019) discusses the important aspect of human capital externalities.
- If there are such externalities, the human capital brought by immigrants makes also the native workers more productive.

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- In other words, <u>the human capital of immigrants increases the marginal product of native labor</u>, and therefore <u>shifts outwards the labor demand</u>.
- Graphically, this corresponds to the following situation:

Figure 3. The immigration surplus and human capital externalities

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- In Figure 3, the immigration surplus is given by the sum of the triangle B'C'D (or the traditional immigration surplus) plus the shaded area of the trapezoid A'B'BA, which measures the impact of immigration on the total product of native workers (Borjas, 2019, p. 17).

- Borjas (2019) shows that, assuming that immigration increases marginal productivity by 1%, the immigration surplus in 2017 in the US would be approximately 3 times bigger than the one estimated without assuming human capital externalities.

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Immigration and Economic Growth

- In the literature, however, "the evidence supporting the conjecture that high-skill immigration generates sizable human capital externalities is mixed. There are some historical events that produced such externalities, but there are also other events where the externalities are absent." (Borjas, 2019, p. 26)

- In any case, the implication for growth depends on the growth model one has in mind. If the growth model is not the Solow model but it is one of endogenous growth, then a factor like a human capital externality can imply an increase in the long-term growth rate (Lucas, 1988) (see also Jones, 2013, p. 220)

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